(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
6 May 2004 (06.05.2004)

PCT

(10) International Publication Number
WO 2004/038059 A2

(51) International Patent Classification[7]: C23C

(21) International Application Number:
PCT/US2003/033879

(22) International Filing Date: 24 October 2003 (24.10.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/421,478 24 October 2002 (24.10.2002) US

(71) Applicant *(for all designated States except US)*: **HONEYWELL INTERNATIONAL INC** [US/US]; 101 Columbia Road, Morristown, NJ 07962 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **STROTHERS, Susan** [US/US]; 12426 N. Forker Road, Spokane, WA 99216 (US). **HORT, Werner** [US/US]; 123 Clearbrook Drive, Cranberry, PA 16066 (US). **MCNEIL, Frederick** [US/US]; 212 Hawk Court, Alamo, CA 94507 (US).

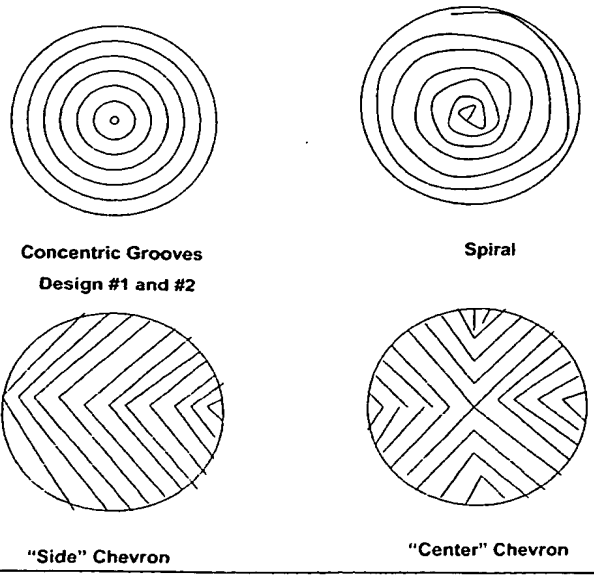
(74) Agents: **THOMPSON, Sandra P.** et al.; Bingham McCutchen LLP, 600 Anton Blvd., 18th Floor, Costa Verde, CA 92626 (US).

(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ (utility model), CZ, DE (utility model), DE, DK (utility model), DK, DM, DZ, EC, EE (utility model), EE, ES, FI (utility model), FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK (utility model), SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: TARGET DESIGNS AND RELATED METHODS FOR ENHANCED COOLING AND REDUCED DEFLECTION AND DEFORMATION



(57) Abstract: A sputtering target is described herein that comprises: a) a target surface component comprising a target material; b) a core backing component having a coupling surface and a back surface, wherein the coupling surface is coupled to the target surface component; and c) at least one surface area feature coupled to or located in the back surface of the core backing component, wherein the surface area feature increases the effective surface area of the core backing component. Additional sputtering targets comprises: a) an integrated target surface component and core backing component, wherein the surface component and the backing component comprise the same target material or a material gradient; and b) at least one surface area feature that is on or integrated into the core backing component, wherein the surface area feature increases the effective component of the core backing component. Methods of forming a sputtering target are also described that comprise: a) providing a target surface component comprising a surface material; b) providing a core backing component comprising a backing material and having a coupling surface and a back surface; c) providing at least one surface area feature coupled to or located in the back surface of the core backing plate, wherein the surface area feature increases the effective surface area of the core backing plate or providing at least one surface area feature coupled to or located in the coupling surface of the core backing component, wherein the surface area feature increases the effective surface area of the core backing component; and d) coupling the surface target material to the coupling surface of the core backing material.

WO 2004/038059 A2